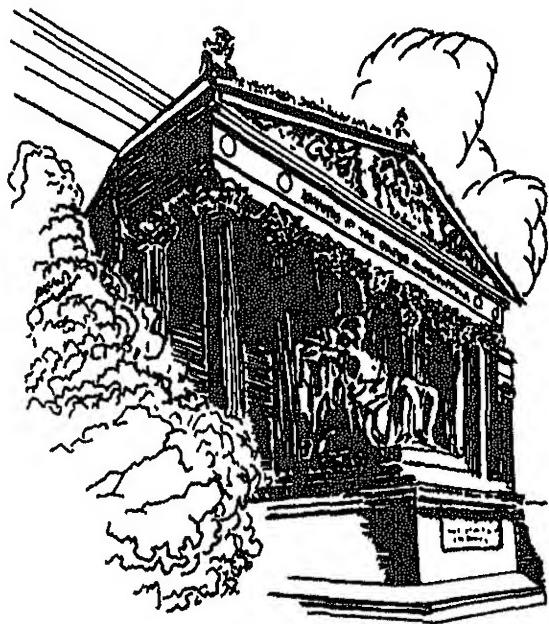


**STOCKPILE
REPORT
to the
CONGRESS**



July - December 1970

**EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF EMERGENCY PREPAREDNESS**

WASHINGTON, D. C. 20504

**EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF EMERGENCY PREPAREDNESS
WASHINGTON, D.C. 20504**

OFFICE OF THE DIRECTOR

May 12, 1971

Honorable Spiro T. Agnew
President of the Senate

Honorable Carl Albert
Speaker of the House of Representatives

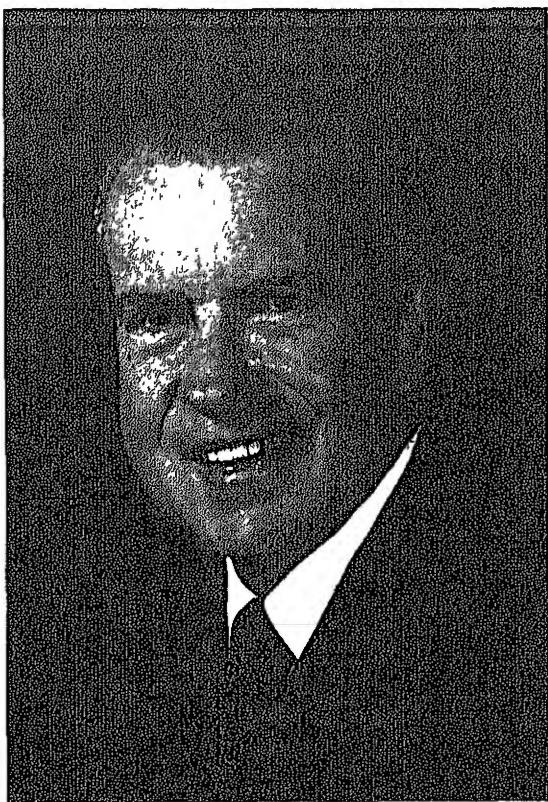
Sirs:

Pursuant to Section 4 of the Strategic and Critical Materials Stock Piling Act, Public Law 520, 79th Congress, there is presented herewith the semiannual report to the Congress on the strategic and critical materials stockpiling program for the period July 1 to December 31, 1970.

A statistical supplement to this report was transmitted to you on March 9, 1971.

Sincerely,

G. A. Lincoln
G. A. Lincoln
Director



President Richard M. Nixon has delegated to the Director, Office of Emergency Preparedness, the responsibility for preparing and submitting to the Congress the report on the stockpiling program, as prescribed by the Strategic and Critical Materials Stock Piling Act.

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INTRODUCTION

The Director of OEP, under Presidential Executive Order 11051, determines what materials are strategic and critical, and sets the quality and quantities of such materials which are to be stockpiled to meet national security needs.

Quantities of materials in excess of these needs are scheduled for disposal in an orderly way and in accordance with provisions of the Strategic and Critical Materials Stock Piling Act requiring that disposal plans "...shall be fixed with due regard to the protection of the United States against avoidable loss on the sale or transfer of the material to be released and the protection of producers, processors, and consumers against avoidable disruption of their usual markets." The emphasis on disposal of

unneeded excesses is shown by the proposed legislation planned for submission to the first session of the 92nd Congress. The Administration intends during this session of Congress to propose disposal legislation for all existing excesses for which disposal authority has not been received, with the exception of three materials where market conditions preclude submission of legislation. Legislation for these three materials will be submitted as soon as market conditions permit.

As the year ended, a broad review of stockpile policy was well advanced. It is expected that this review, when completed, will lead to proposals for substantive changes in stockpile legislation to make it more consistent with the management needs of the 1970's.



SUPPLY-REQUIREMENTS STUDIES

Material usage and supply patterns must be monitored to assure that present and future emergency needs for strategic and critical materials are accurately reflected in current stockpile planning. To accomplish this, OEP obtains reports from other agencies on the use patterns for materials in quantitative and qualitative terms. When reviews of these reports indicate the status of a particular material has substantially changed or is likely to change in the future, new supply-requirements analyses are initiated. Similar procedures are followed for supply of the materials. The supply-requirements situation of specific commodities is then examined in the context of national security guidance. These reviews cover a wide range of critical materials and are not limited to materials currently held in the stockpile.

Although preliminary analyses were made for more than 75 materials, no new supply-requirements revisions were approved during the reporting period. However, several of those in process at the year end were nearing completion. These later revisions reflected a continuation of the review series that began in late 1968 with a completion of the last review of stockpile policy.

On February 25, 1970, OEP established a task force to modernize

stockpile management, with primary emphasis on analysis and related activities. The intention was to utilize more fully electronic data processing and econometric modeling techniques to make extensive analyses of supply-requirements and to improve inventory management. During the reporting period, this effort was virtually completed, with the result that the stockpile management program now has a greatly increased capability for continuing analyses. Under this program, supply data provided by the delegate agencies can now be matched against estimated requirements generated by the linking of a macro economic model with a micro analysis broken down by industry sectors used by the Department of Commerce's Office of Business Economics in its inter-industry (input-output) studies.

The historical data base that guides the requirements analysis was developed initially on a 5-year historical basis, and is to be extended back to 1950 by the delegate agencies.

As a test of the new supply-requirements analysis capability, projections were made to support the current review of stockpile policy. The results were highly satisfactory. In addition, an analysis of projected requirements for 1969 versus actual requirements for that year indicated an average error of about 3 percent: extremely good results for this level of analysis.

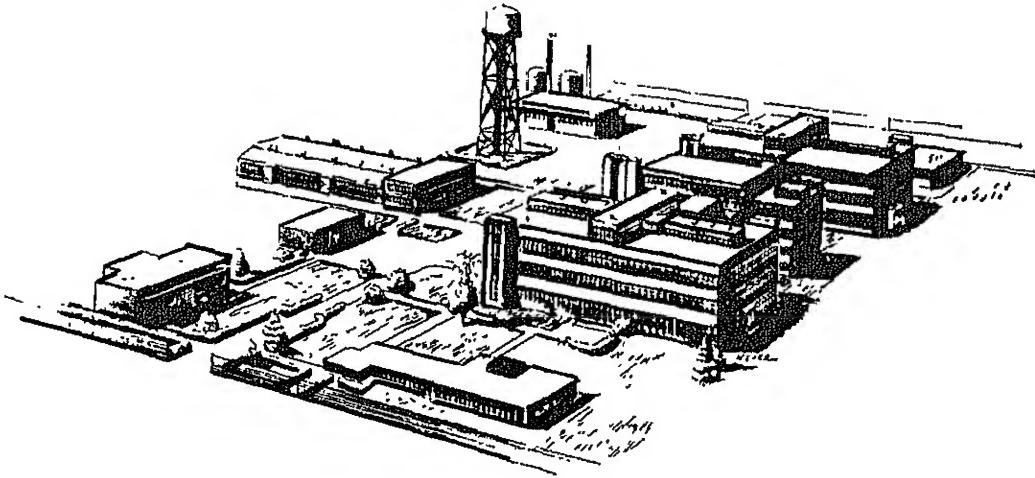
SUMMARY OF GOVERNMENT INVENTORIES OF STRATEGIC AND CRITICAL MATERIALS

As of December 31, 1970, the estimated value of strategic materials held

Government inventories amounted to \$5.9 billion, including \$4.4 billion held against objectives, and \$2.5 billion in excess to objectives. Over 75 percent of the market value of these excesses was made up of 13 materials: aluminum, metallurgical grade bauxite (Jamaica and Surinam), metallurgical grade chromite (upgraded forms and subspecification ores), cobalt, industrial diamond bort and stones, and, metallurgical grade manganese, quartz crystals, rubber, tin, tungsten, and zinc.

The following table is a summary of the total value of all materials carried in Government inventories, including those with quantities in excess of established

stockpile objectives, as of December 31, 1970. It indicates the acquisition cost and estimated market value of materials held in the stockpile. The market values shown have not been adjusted for normal premiums and discounts relating to contained qualities, or for materials handling costs that would be related to movement of material at disposal. In addition, attainment of market values shown would be a function of time available for disposal; with the size of the Government inventories, rapid disposal could significantly depress prices and result in reduced revenues. The market values listed do not, therefore, reflect the amount of revenue that would be realized at time of sale.



**SUMMARY OF GOVERNMENT INVENTORIES OF
STRATEGIC AND CRITICAL MATERIALS**
December 31, 1970

	Acquisition Cost	Market Value
A. I. Inventories Reserved for Objectives		\$4,386,237,100
II. Uncommitted Excess Inventories		<u>2,530,811,900</u>
Total		<u>\$6,917,049,000</u>
B. I. Total Inventories in Storage		
National Stockpile	\$4,247,835,600	\$5,080,712,000
Supplemental Stockpile	1,420,581,700	1,587,296,600
Defense Production Act	704,821,500	436,806,700
Commodity Credit Corp.	<u>44,300</u>	<u>43,500</u>
Total on Hand	6,373,283,100	<u>7,104,858,800</u>
II. Inventories Within Objective		
Total	3,602,049,300	4,386,237,100
III. Excess Inventories in Storage		
Total	2,771,233,800	2,718,621,700

Market values are computed from prices at which similar materials are being traded; or, in the absence of current trading, at an estimate of the price which would prevail in commercial markets. Market values are unadjusted for normal premiums and discounts relating to contained qualities, or for inherent materials handling allowances. *Market values do not necessarily reflect the amount that would be realized at time of sale.*

The Uncommitted Excess excludes the unshipped sales; the Inventories in Storage include quantities that have been sold but not shipped.

Source: General Services Administration

STOCKPILE OBJECTIVES

In the past, stockpile objectives have been calculated for both conventional and nuclear wars. Conventional war stockpile objectives are based on a 3-year war estimated to begin not less than one nor more than two years in the future. To determine the size and scope of the war effort, the gross national product and components are projected for each of the intervening years prior to the outbreak of the war and then for each of the three war years.

Nuclear war objectives have been calculated at levels designed to meet shortages that might occur during both the actual period of hostility and the period of reconstruction to a point where the national economy would be adequate to meet national defense and essential

civilian requirements. Since the projected reduction in the ability to consume exceeds the corresponding reduction in supply, it has been determined that conventional war stockpile objectives would be adequate to meet nuclear war requirements.

No new conventional war objectives were established during July-December 1970, as work was continuing on a general review of all stockpile policy.

The bar chart below shows the estimated market value of the objectives established and the extent to which materials on hand in all Government inventories (National Stockpile, Supplemental Stockpile, Defense Production Act, and Commodity Credit Corporation) meet these objectives.

STATUS OF STOCKPILE OBJECTIVES

AS OF DECEMBER 31, 1970

(In Billions of Dollars)

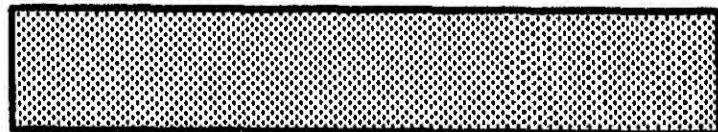
Market Value

OBJECTIVES



\$ 5.0

ON HAND
TOWARD
OBJECTIVES



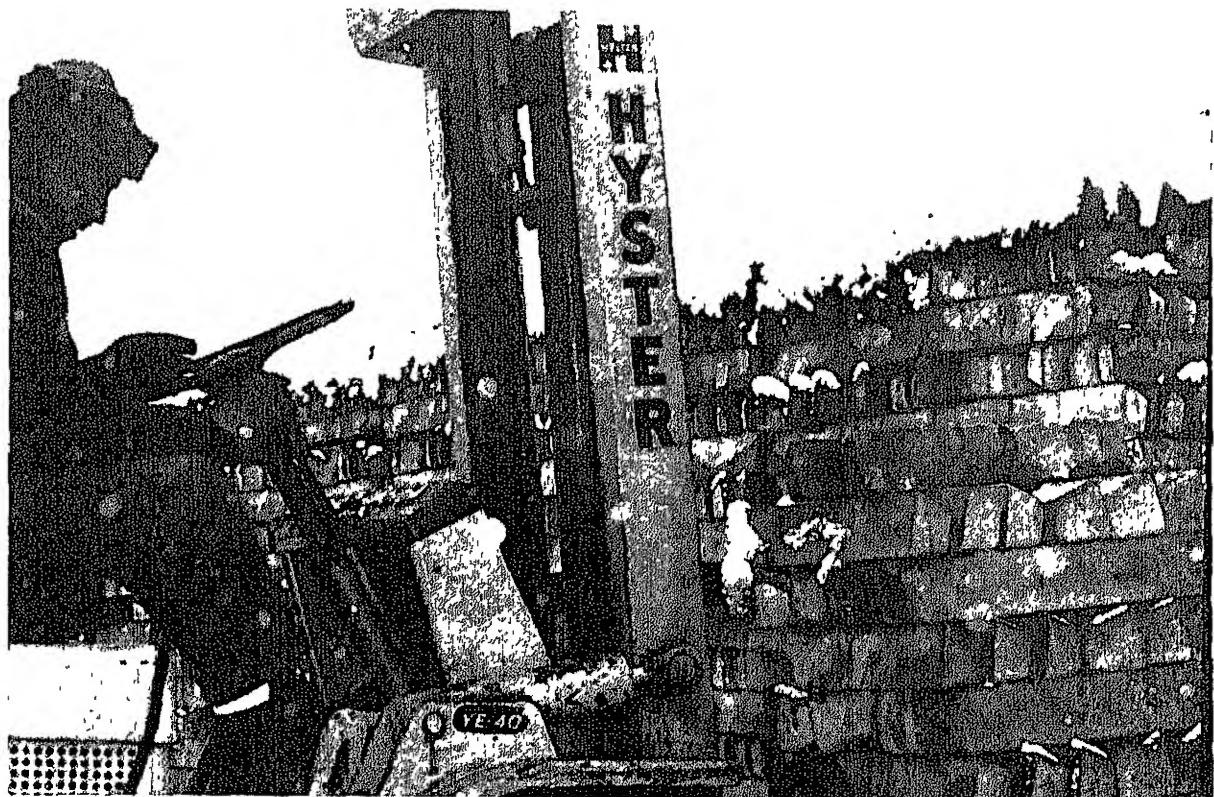
\$ 4.4

As of December 31, 1970, total quantities of stockpile grade materials on hand and on order for all Government-owned inventories were in excess or equal to the stockpile objectives for 59 of the 71 basic materials on the List of Strategic and Critical Materials for Stockpiling.

In addition to specification grade materials, Government inventories contain some nonspecification grades not credited to stockpile objectives. Much of the nonspecification grade materials in the National Stockpile was acquired by the transfer of Government-owned surpluses to the stockpile after World War II. Several were of specification grade when acquired but no longer qualify due to changes in

industry practices and technological advances.

The objective, inventory, excess, and balance of disposal authorizations, for each material on the Strategic and Critical Materials List, are shown in the following summary. Disposal balances shown represent Congressional authorizations for sales of excess materials in the National and Supplemental Stockpiles or, in the case of DPA materials, sales approved by the Director, OEP. Planning is continuing for the disposal of all remaining excesses. Inventory changes during the reporting period were due primarily to disposals or to reclassification, upgrading, and other adjustments in the inventories.



Outshipments must be made, regardless of weather conditions.

**SUMMARY OF GOVERNMENT INVENTORIES, OBJECTIVES,
EXCESSES AND BALANCE OF DISPOSAL AUTHORIZATIONS**

**Basic Stockpile Materials
As of December 31, 1970**

(Market Value - \$ Millions)

Commodity	Unit	Objective	Total Inventory ¹	Market Value ²	Uncommitted Excess	Market Value ²	Balance of Disposal Authorization
1. Aluminum	ST	450,000	1,281,282	\$743.1	831,282	\$482.2	831,282 ³
2. Aluminum Oxide, Fused	ST	300,000	428,493	71.4	128,493	18.2	128,504
3. Antimony	ST	40,700	46,746	88.8	6,046 ⁴	10.6	0
4. Asbestos, Amosite	ST	40,000	60,457	12.8	20,457 ⁵	4.3	9,218
5. Asbestos, Chrysotile	ST	13,700	12,123	5.9	1,167	0.2	1,167
6. Bauxite, Metal, Jamaica LDT	LDT	5,000,000	8,858,881	120.3	3,858,881 ⁶	52.4	714,000
7. Bauxite, Metal, Surinam LDT	LDT	5,300,000	7,766,438	119.2	2,466,438	37.9	2,466,438
8. Bauxite, Refractory LCT	LCT	173,000	173,000	7.6	0	0	0
9. Beryl	ST	28,000	40,535	70.5	12,535 ⁶	26.7	2,668
10. Bismuth	LB	2,100,000	2,350,954	14.1	250,954	1.5	251,307
11. Cadmium	LB	6,000,000	10,148,836	22.8	4,148,836	9.3	4,148,836
12. Castor Oil	LB	50,000,000	63,613,257	12.5	13,613,257	2.3	13,589,015
13. Chromite, Chemical SDT	SDT	260,000	585,860	25.0	325,860 ⁴	17.8	0
14. Chromite, Metallurgical SDT	SDT	3,100,000	4,453,007	598.3	1,353,007 ⁴	194.9	39,368
15. Chromite, Refractory SDT	SDT	368,000	1,206,349	33.9	838,349	23.6	806,349
16. Cobalt	LB	38,200,000	78,272,666	172.2	40,072,666	88.2	40,072,666
17. Columbium	LB	1,176,000	9,353,684	16.1	5,782,143 ⁴	9.8	935,685
18. Copper	ST	775,000	253,400	273.4	0	0	0
19. Cordage Fibers, Abaca LB	LB	25,000,000	73,271,292	17.6	48,271,292 ⁴	11.6	23,359,657
20. Cordage Fibers, Sisal LB	LB	100,000,000	199,244,446	14.9	99,244,446 ⁴	7.4	0
21. Diamond Dies, Small PC	PC	25,000	24,225	0.9	0	0	0
22. Diamond, Industrial Bort . . . KT	KT	23,700,000	42,611,479	101.4	18,911,479 ⁴	42.6	0
23. Diamond, Industrial Stones . . . KT	KT	20,000,000	25,230,386	339.9	5,230,386 ⁴	72.2	269,650
24. Feathers and Down LB	LB	3,000,000	3,000,000	10.9	0	0	0
25. Fluorspar, Acid Grade SDT	SDT	540,000	1,002,533	76.3	112,533 ⁷	8.5	112,533
26. Fluorspar, Metallurgical SDT	SDT	850,000	411,788	19.8	0	0	0
27. Graphite, Natural, Ceylon . . . ST	ST	5,500	5,498	1.0	0	0	0
28. Graphite, Natural, Malagasy . . . ST	ST	18,000	32,007	3.6	14,067	1.6	14,067
29. Graphite, Other ST	ST	2,800	2,800	0.6	0	0	0
30. Iodine	LB	8,000,000	8,011,839	11.6	11,839	0.02	0
31. Jewel Bearings PC	PC	57,500,000	58,806,892	19.0	14,726,698 ⁸	0.4	0
32. Lead	ST	530,000	1,136,690	306.9	606,690 ⁴	163.8	108,557
33. Manganese, Battery, Natural . . SDT	SDT	135,000	308,836	27.4	173,836	14.5	173,836
34. Manganese, Battery, Synthetic Dioxide SDT	SDT	1,900	21,679	10.1	19,779 ⁵	9.2	14,974
35. Manganese Ore, Chemical A . . SDT	SDT	35,000	146,914	10.3	111,914	7.8	111,914

**SUMMARY OF GOVERNMENT INVENTORIES, OBJECTIVES,
EXCESSES AND BALANCE OF DISPOSAL AUTHORIZATIONS (Continued)**

Basic Stockpile Materials
As of December 31, 1970

(Market Value - \$ Millions)

Commodity	Unit	Objective	Total Inventory ¹	Market Value ²	Uncommitted Excess	Market Value ²	Balance of Disposal Authorization
36. Manganese Ore, Chemical B . . . SDT		35,000	100,838	\$ 5.0	65,838	\$ 3.3	65,838
37. Manganese, Metallurgical . . . SDT		4,000,000	12,111,520	414.7	8,165,146 ^s	235.4	2,473,884
38. Mercury FL		126,500	200,105	72.0	73,605 ^s	26.5	0
39. Mica, Muscovite Block St./better LB		6,000,000	14,712,544	55.1	7,953,044 ^p	16.1	6,445,819
40. Mica, Muscovite Film, 1 & 2 quality LB		2,000,000	1,468,982	16.5	57,507 ^s	0.1	6,420
41. Mica, Muscovite Splittings LB		19,000,000	43,314,336	52.0	24,314,336 ^s	29.2	21,114,461
42. Mica, Phlogopite Block LB		150,000	168,580	0.1	151,859	0.03	151,859
43. Mica, Phlogopite Splittings LB		950,000	4,853,398	7.8	3,903,398 ^s	6.2	3,553,398
44. Molybdenum LB		36,500,000	42,603,519	75.8	6,103,519	10.3	6,090,674
45. Nickel ST		55,000	50,000 ^{1,0}	132.7	0	0	0
46. Opium AvLB		143,000	142,595	14.0	1,497	0.3	1,409
47. Platinum Group, Iridium . . . TrOz		17,000	17,256	2.6	256 ^s	0.04	0
48. Platinum Group, Palladium . . . TrOz		1,300,000	1,249,832	46.2	0	0	0
49. Platinum Group, Platinum . . . TrOz		555,000	450,035	59.6	0	0	0
50. Pyrethrum LB		25,000	63,375	0.6	38,375 ^s	0.4	0
51. Quartz Crystals LB		320,000	5,054,802	55.0	4,734,802 ^s	51.3	4,404,802
52. Quinidine OZ		2,000,000	1,800,377	3.7	0	0	0
53. Quinine OZ		4,130,000	3,548,161	5.0	0	0	0
54. Rubber LT		200,000	341,988	141.7	141,988	58.8	141,988
55. Rutile SDT		100,000	56,525	10.5	0	0	0
56. Sapphire & Ruby KT		18,000,000	16,305,502	0.2	0	0	0
57. Shellac LB		1,000,000	7,039,084	2.9	6,039,084 ^s	2.5	3,139,084
58. Silicon Carbide, Crude ST		30,000	196,453	42.6	166,453 ^s	36.1	0
59. Silver (fine) TrOz		139,500,000	165,000,000	269.8	25,500,000 ^{1,1}	41.7	0
60. Sperm Oil LB		23,400,000	23,402,661	7.0	0	0	0
61. Talc, Steatite Block & Lump . . ST		200	1,204	0.4	1,004	0.3	1,004
62. Tantalum LB		3,400,000	4,187,006	40.3	118	0.002	0
63. Thorium Oxide ST		40	40 ^{1,2}	0.3 ^{1,2}	0	0	0
64. Tin LT		232,000	252,627	912.5	20,627	74.5	20,627
65. Titanium Sponge ST		33,500	35,015	85.6	8,514	18.0	8,514
66. Tungsten LB		60,000,000	130,655,522	459.3	70,656,336	245.6	70,399,656
67. Vanadium ST		540	3,306	24.5	2,766 ⁴	20.7	1,566
68. Vegetable Tannin, Chestnut . . LT		9,500	27,035	7.5	17,535 ^s	4.7	12,020
69. Vegetable Tannin, Quebracho . . LT		50,600	189,203	53.4	138,603 ^s	39.1	103,316

**SUMMARY OF GOVERNMENT INVENTORIES, OBJECTIVES,
EXCESSES AND BALANCE OF DISPOSAL AUTHORIZATIONS (Continued)**

Basic Stockpile Materials
As of December 31, 1970

(Market Value - \$ Millions)

Commodity	Unit	Objective	Total Inventory ¹	Market Value ²	Uncommitted Excess	Market Value ²	Balance of Disposal Authorization
70. Vegetable Tannin, Wattle	LT	9,500	34,334	\$ 8.8	24,834 ⁵	\$ 6.4	19,373
71. Zinc	ST	560,000	1,119,985	336.0	559,985 ⁴	168.0	44,784

FOOTNOTES

¹Total inventory consists of stockpile and nonstockpile grades and reflects uncommitted balance.

²Market values are estimated from prices at which similar materials are being traded; or in the absence of trading data, at an estimate of the price which would prevail in the market. Prices used are unadjusted for normal premiums and discounts relating to contained qualities or normal freight allowances. *The market values do not necessarily reflect the amount that would be realized at time of sale.*

³Committed for sale but undelivered under long-term contracts.

⁴Balance of excess pending Congressional approval at close of 91st Congress.

⁵Disposal planning on balance of excess currently underway.

⁶Balance of excess; disposal planning deferred due to market conditions

⁷Excludes 350,000 SDT credited to metallurgical fluorspar.

⁸Factory inspecting feasibility of reworking bearings to meet stockpile specifications.

⁹Excludes 759,500 LBS credited to mica, muscovite film. Disposal planning on balance of excess currently underway.

¹⁰Includes approximately 10,000 ST loaned from stockpile under Section 5 of the Strategic and Critical Materials Stock Piling Act.

¹¹Public Law 91-607, enacted December 31, 1970, authorized the U.S. Mint to produce commemorative Eisenhower silver dollar coins to be made in part from excess stockpile silver which will be transferred back to the Mint.

¹²Thorium nitrate credited as 40 ST thorium oxide, \$0.3 million market value.

ABBREVIATIONS

FL	-	Flask	OZ	-	Ounce
KT	-	Carat	PC	-	Piece
LB	-	Pound	SDT	-	Short Dry Ton
LCT	-	Long Calcined Ton	ST	-	Short Ton
LDT	-	Long Dry Ton	TrOz	-	Troy Ounce
LT	-	Long Ton			

OTHER MATERIALS IN GOVERNMENT INVENTORIES

Inventories of materials that have been removed from the stockpile list, and

of other materials for which there are no stockpile objectives, are indicated in the table below. These inventories are not included in the previous tabulation.

SUMMARY OF GOVERNMENT INVENTORIES AND BALANCE OF DISPOSAL AUTHORIZATIONS COVERING MATERIALS FOR WHICH THERE ARE NO STOCKPILE OBJECTIVES

As of December 31, 1970

(Market Value - \$ Millions)

Commodity	Unit	Total Inventory ¹	Market Value ²	Balance of Disposal Authorization
Asbestos, crocidolite	ST	37,320	\$ 6.9	37,320
Celestite	SDT	25,849 ³	0.7	12,680
Diamond tools	PC	64,178 ⁴	0.8	0
Kyanite-Mullite	SDT	4,820 ³	0.5	0
Magnesium	ST	99,646 ³	73.0	21,631
Mica, muscovite block, St. B/lower	LB	3,577,854	7.2	3,577,854
Mica, muscovite film, 3rd quality	LB	451,200	3.0	451,200
Rare earths	SDT	13,337 ³	3.6	5,106
Selenium	LB	474,774 ³	4.3	0
Talc, steatite ground	ST	3,900	0.02	3,900
Thorium nitrate	LB	3,661,397 ⁵	15.2	3,161,397
Zirconium ore, baddeleyite	SDT	16,114	1.0	16,114
Zirconium ore, zircon	SDT	1,720	0.002	1,720

¹ Inventory reflects uncommitted balance.

² Market values are estimated from prices at which similar materials are being traded; or in the absence of trading data, at an estimate of the price which would prevail in the market. Prices used are unadjusted for normal premiums and discounts relating to contained qualities or normal freight allowances.

The market values do not necessarily reflect the amount that would be realized at time of sale.

³ Balance of excess pending Congressional approval.

⁴ Disposal planning currently underway.

⁵ Includes 80,000 pounds credited to thorium oxide objective, \$0.3 million market value. Disposal planning on balance of excess currently underway.

NATIONAL STOCKPILE ACTIVITIES

PROCUREMENT AND UPGRADING

The OEP Strategic Stockpile Procurement Directive for FY 1971 was delayed pending passage on December 17, 1970, of the Independent Offices Appropriation Act for FY 1971. This directive will provide only for the cash procurement of two million pieces of jewel bearings from the Federal facility at Rolla, North Dakota. Further contracting for procurement and acquisition of other strategic and critical materials was suspended in January 1970.

Procurement - Cash

Jewel Bearings. The Government-owned William Langer Jewel Bearing Plant, Rolla, North Dakota, which is operated by the Bulova Watch Company, Incorporated, continued to produce jewel bearings for the National Stockpile and for defense contractors under the 3-year management operating contract, which became effective January 1, 1970.

The first year of operations under the new contract has shown that some of the anticipated improvements in the overall operation of the plant have already been achieved. The new operation has enabled the plant to balance production more effectively by the use of revolving fund financing resulting in more economical use of labor and equipment, and to improve delivery time by the use of the shelf inventory which heretofore was not permitted. In addition, the new accounting system associated with the revolving fund financing has provided a

simplified and more businesslike measurement of financial condition.

As a result of these improvements, and the net operating profit which has been realized each month, a proposed price reduction is presently under active review, with expectations that a new reduced price schedule will be placed into effect in the near future.

Procurement - Exchange

Titanium Sponge. Deliveries under two contracts entered into on July 1, 1969, for furnishing a total of 6,000 short tons of titanium sponge were completed on December 2, 1970.

Ferromanganese - Palladium. Under a contract entered into on August 31, 1967, 200,000 troy ounces of palladium have been delivered to the stockpile. This contract also provided for upgrading of manganese ore to 36,000 short tons of medium carbon ferromanganese. As of December 31, 1970, 28,835 short tons of ferromanganese had been received. On November 9, 1970, the contract was amended to extend the final delivery date from June 30, 1971 to March 31, 1972.

Platinum. Services are continuing under a contract entered into on March 17, 1969, for refining 200,000 troy ounces of Government-owned platinum and 4 troy ounces of iridium. Deliveries under the contract as of December 31, 1970, totaled 167,994 troy ounces, and are to be completed by April 17, 1971.

Silicomanganese. The contract entered into on June 28, 1968, for the conversion of Government-owned manganese ore to 45,500 short tons of silicomanganese was canceled effective July 1, 1970, due to a revised supply-requirements situation. Deliveries under the contract through June 30, 1970, totaled 23,574 short tons.

Ferrocolumbium. Under the contract entered into on March 31, 1969, for furnishing Grade B ferrocolumbium containing 279,000 pounds of columbium, deliveries as of December 31, 1970, totaled 139,534 pounds. Deliveries are to be completed by March 14, 1971.

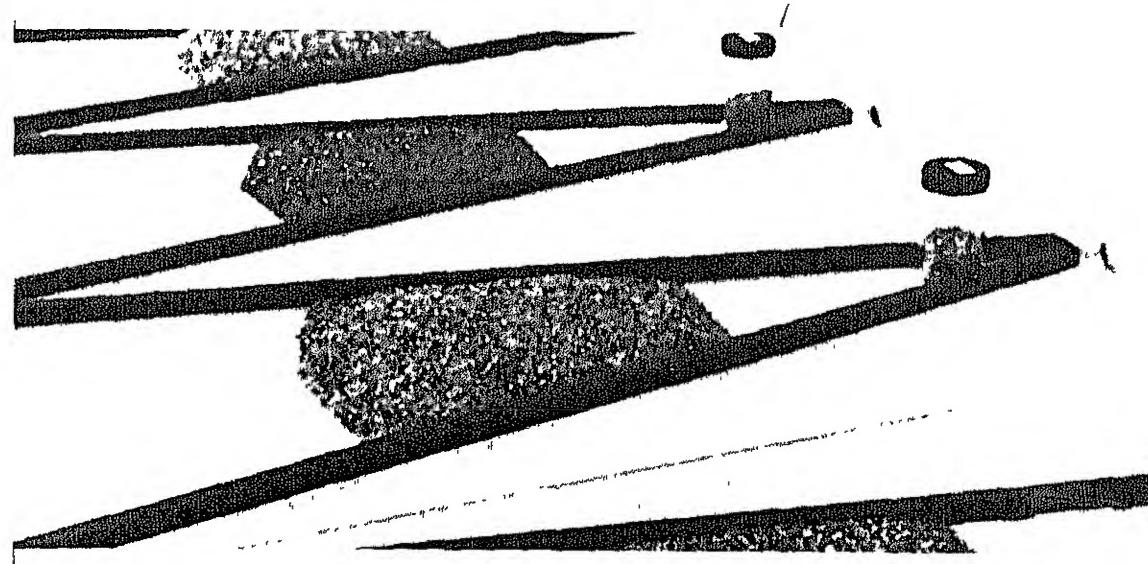
DISPOSAL PROGRAM

Disposal sales from all Government inventories during July-December 1970 totaled \$114.8 million--a \$77.6 million decrease from sales for the same period in 1969. Of the total, \$58.2 million were from the National and Supplemental Stockpiles, \$41.4 million from the Defense

Production Act inventory, and \$15.2 million from other sales (primarily silver).

Including the January-June sales commitments of \$92.0 million, total sales for calendar year 1970 amounted to \$206.8 million. This was \$135.2 million less than the \$342.0 million for calendar year 1969. Cumulative sales since the inception of the disposal program in 1958 total approximately \$3.6 billion. (See Figures 1 and 2, page 13.)

Approximately 76 percent (\$87.5 million) of the total disposals for July-December 1970 consisted of eight materials. These were *chemical chromite*, \$8.8 million; *industrial diamond stones*, \$4.9 million; *acid grade fluorspar*, \$6.0 million; *rubber*, \$6.1 million; *silver*, \$14.2 million; *tin*, \$6.6 million; *tungsten* \$34.5 million; and *zinc*, \$6.4 million. The commodities and quantities of each material making up the total sales for July-December are shown in the table on page 14.



This picture shows the layout necessary to accomplish the Government's first major disposal of excess industrial diamond stones.

Million Dollars

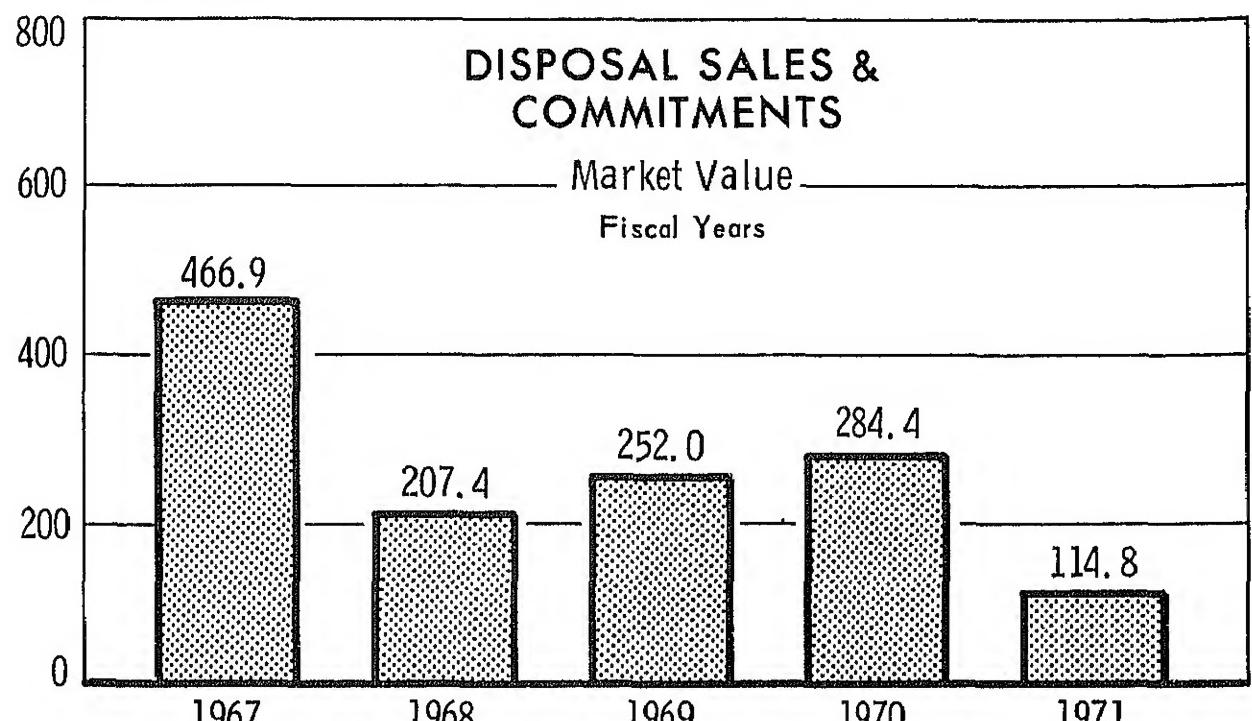


Figure 1

(First 6 Months)

Million Dollars

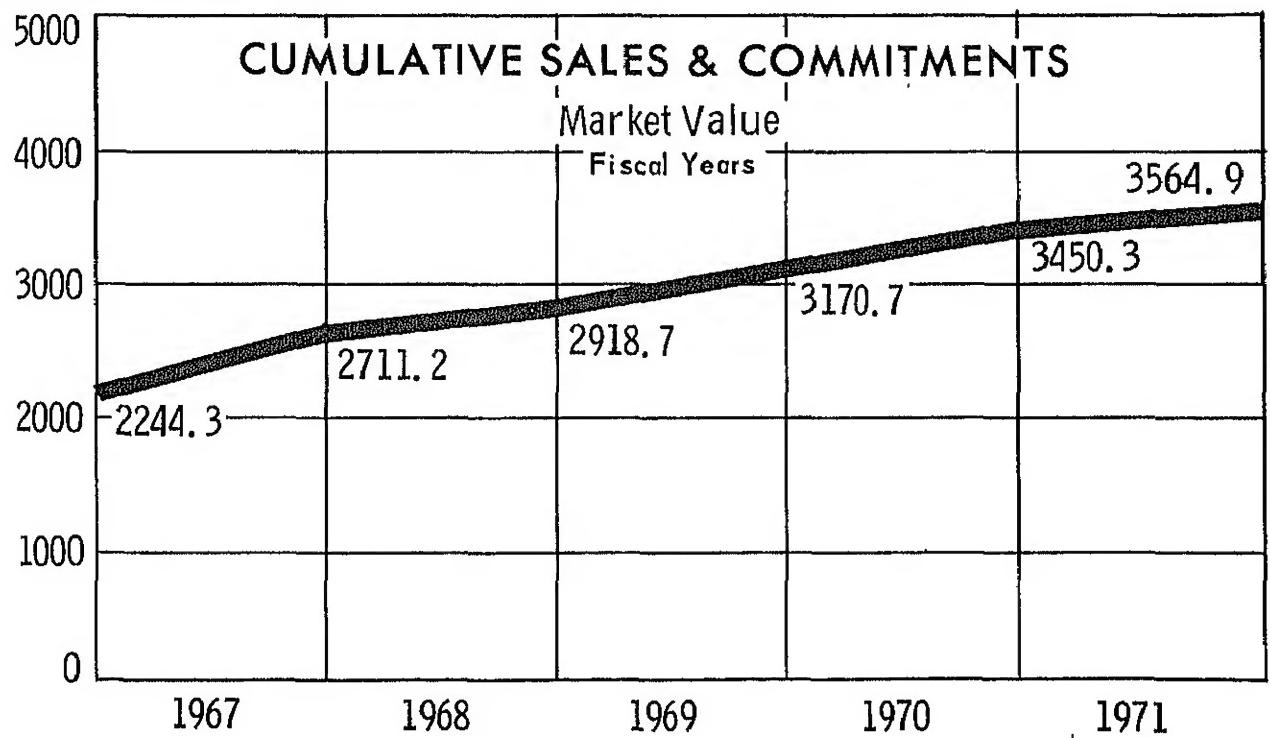


Figure 2

(First 6 Months)

DISPOSALS OF STRATEGIC AND CRITICAL MATERIALS

July - December 1970

Material	Unit	Quantity	Sales Commitments		
			Government Use	Industrial Use	Total Sales Value
NATIONAL AND SUPPLEMENTAL STOCKPILE INVENTORIES:					
Aluminum	ST	23	\$	13,165	\$ 13,165
Aluminum Oxide	ST	50		4,175	4,175
Asbestos, Amosite	ST	1,100		194,500	194,500
Asbestos, Chrysotile	ST	1,677		291,992	291,992
Asbestos, Crocidolite	ST	2,628		500,490	500,490
Bauxite, Surinam	LDT	123,529		2,367,499	2,367,499
Beryl	ST	545		207,625	207,625
Bismuth	LB	253,700		1,522,430	1,522,430
Cadmium	LB	6,200		18,820	18,820
Castor Oil	LB	4,869,800		681,523	681,523
Chromite, Chemical	SDT	609,258		8,779,769	8,779,769
Chromite, Metallurgical	SDT	39,240		1,906,315	1,906,315
Chromite, Refractory	SDT	20,582		575,150	575,150
Cobalt	LB	114,954	69,746	178,630	248,376
Cordage Fibers, Abaca	LB	10,204,048	8,381	1,969,458	1,977,839
Cordage Fibers, Sisal	LB	520,702		18,660	18,660
Corundum	ST	1,964		39,051	39,051
Diamond Stones	KT	1,500,000		4,878,750	4,878,750
Fluorspar, Acid Grade	SDT	100,159		5,999,205	5,999,205
Graphite, Nat., Malagasy	ST	330		40,227	40,227
Graphite, Nat., Ceylon	ST	386		121,973	121,973
Lead	ST	6,754	1,707,598	3,600	1,711,198
Magnesium	ST	4,176		2,676,582	2,676,582
Manganese, Bat. Grade, Synthetic Dioxide	SDT	1,001		343,332	343,332
Manganese, Metallurgical	SDT	29,672		570,615	570,615
Mica, Muscovite Block	LB	362,814		223,811	223,811
Mica, Muscovite Film	LB	3,453		2,504	2,504
Mica, Muscovite Splittings	LB	337,800		119,992	119,992
Mica, Phlogopite Splittings	LB	19,384		6,807	6,807
Molybdenum	LB	195,116		364,623	364,623
Quartz Crystals	LB	28,629		118,599	118,599
Rare Earths	SDT	182		92,102	92,102
Rubber	LT	14,000		6,093,105	6,093,105
Shellac	LB	1,378,321		291,307	291,307
Tin	LT	1,784	6,627,328		6,627,328
Tungsten	LB	397,892		1,343,961	1,343,961
Vanadium	ST			-5,573 ¹	-5,573
Vegetable Tannins:					
Chestnut	LT	684		88,703	88,703
Quebracho	LT	1,830	24,000	414,971	438,971
Wattle	LT	1,472		314,337	314,337
Zinc	ST	20,062	6,415,698	4,025	6,419,723
Zirconium Ore, Baddeleyite	SDT	390		7,722	7,722
Total National and Supplemental Stockpiles			\$14,852,751	\$43,384,532	\$58,237,283

DISPOSALS OF STRATEGIC AND CRITICAL MATERIALS (Continued)

July - December 1970

Material	Unit	Quantity	Sales Commitments		
			Government Use	Industrial Use	Total Sales Value
DEFENSE PRODUCTION ACT INVENTORY:					
Asbestos, Chrysotile	ST	305	\$	56,425	\$ 56,425
Chromite, Metallurgical	SDT	900,778		6,491,077	6,491,077
Columbium	LB	270,565		571,080	571,080
Copper	ST	667 ²	798,334		798,334
Manganese, Metallurgical	SDT	4,184		43,280	43,280
Mica, Muscovite Block	LB	367,020		315,009	315,009
Tungsten	LB	10,428,462		33,143,904	33,143,904
Total DPA			\$ 798,334	\$40,620,775	\$ 41,419,109
OTHER (Non-stockpile Inventories):					
Copper	ST		\$ 6,287 ³		\$ 6,287
Mercury	FL	2,702		971,365	971,365
Silver	Fine TrOz			14,169,678 ⁴	14,169,678
Total OTHER				\$15,147,330	\$ 15,147,330
GRAND TOTAL			<u>\$21,744,190</u>	<u>\$93,059,532</u>	<u>\$114,803,722</u>

¹Negative sales figure represents adjustment of earlier disposal contracts.

²Represents that portion of copper made available to the U.S. Mint for coinage purposes.

³Represents that portion of sales proceeds of Treasury silver copper alloy in excess of \$.4215 per pound.

Some 454,840 pounds of Treasury copper were sold at an average price of \$.44 per pound.

⁴Represents that portion of the total proceeds in excess of the U.S. monetary value based on \$1.2929 per ounce.

Some 32,491,283 ounces of silver were sold at an average price of \$1.73 per ounce.

STOCKPILE DISPOSAL LEGISLATION

During July-December, 17 disposal bills, with an estimated market value of \$0.5 billion, were enacted. At the start of the period, four other bills were pending and one, covering the disposal of mercury, had been withdrawn. In July, 12 additional bills were proposed to the Congress, bringing the total number

available for their consideration to 16. These 16 bills had a combined value of approximately \$0.7 billion. They were not acted on and will be resubmitted to the 92nd Congress.

The status of stockpile disposal legislation as of December 31, 1970, is indicated in the following table:

STATUS OF STOCKPILE DISPOSAL LEGISLATION

Legislation Enacted

Material	Unit	Quantity	Market Value (\$Millions)	Law Number	Date
Asbestos, Chrysotile	ST	2,844	\$ 0.5	PL 91-329	7-10-70
Bauxite, Surinam	LT	2,600,000	44.0	PL 91-326	7-10-70
Bismuth	LB	300,000	1.8	PL 91-318	7-10-70
Cadmium	LB	4,180,000	16.6	PL 91-314	7-10-70
Castor Oil	LB	18,500,000	2.7	PL 91-319	7-10-70
Chromite, Refractory	SDT	826,900	12.6	PL 91-328	7-10-70
Cobalt	LB	40,200,000	88.4	PL 91-317	7-10-70
Corundum	ST	1,952	0.1	PL 91-330	7-10-70
Fluorspar, Acid Grade	SDT	212,637	12.9	PL 91-320	7-10-70
Graphite, Ceylon	ST	386	0.1	PL 91-327	7-10-70
Magnesium	ST	12,000	8.8	PL 91-321	7-10-70
Manganese, Battery Grade, Natural	SDT	173,800	16.3	PL 91-331	7-10-70
Manganese, Chemical Grade Type A	SDT	111,900	7.8	PL 91-322	7-10-70
Manganese, Chemical Grade Type B	SDT	65,800	3.3	PL 91-323	7-10-70
Molybdenum	LB	3,500,000	6.1	PL 91-333	7-10-70
Shellac	LB	4,300,000	1.8	PL 91-324	7-10-70
Tungsten	LB	100,000,000	<u>281.5</u>	PL 91-325	7-10-70
Total			<u>\$505.3</u>		

**Legislation Pending
(For Resubmission)**

Material	Unit	Quantity	Market Value (\$ Millions)	Number	Legislation Pending Date Proposed
Antimony	ST	6,000	\$ 10.6		7-2-70
Celestite	ST	12,270	0.4		7-2-70
Chromite, Chemical					
Grade	SDT	324,500	8.4		7-2-70
Chromite, Metallurgical					
Grade	SDT	1,313,600	163.4		7-2-70
Columbium	LB	5,010,716	8.2		7-2-70
Cordage Fibers, Abaca	LB	25,000,000	6.0		7-2-70
Cordage Fibers, Sisal	LB	100,000,000	7.4		7-2-70
Diamonds, Industrial					
Bort ¹	KT	18,912,000	42.6	HR 16293	1-15-69
Diamonds, Industrial					
Stones ¹	KT	4,961,000	72.2	HR 16294	2-2-70
Kyanite-Mullite	SDT	4,820	0.5		7-2-70
Lead	ST	498,000	164.2	HR 15834	2-2-70
Magnesium	ST	78,000	57.1		7-2-70
Rare Earths	SDT	8,233	2.1		7-2-70
Selenium	LB	475,000	4.3		7-2-70
Vanadium	ST	1,200	9.8		7-2-70
Zinc	ST	515,200	<u>159.7</u>	HR 15840	2-2-70
Total			<u>\$716.9</u>		

¹ Senate and House Subcommittee hearings were held on these two bills.

NOTES ON STRATEGIC AND CRITICAL MATERIALS DISPOSAL ACTIVITIES JULY-DECEMBER 1970

Chromite, Chemical

Chemical grade chromite sales totaled 609,258 short dry tons, valued at \$8.8 million. These sales completed disposal of all excess chemical grade chromite for which disposal authority had previously been received from the Congress. The demand for chemical chromite was directly tied to the continuing tight market of metallurgical grade chromite. In early July, a disposal bill to permit the sale of approximately 324,500 short dry tons of excess chemical chromite was proposed to the Congress, but no action was taken. The bill will be resubmitted to the 92nd Congress.

Diamond Stones, Industrial

Sales of industrial diamond stones totaled 1.5 million carats, valued at \$4.9 million. This left 269,650 carats available for disposal from a previous Congressional authorization. A disposal bill that would permit sale of 4,961,000 carats, valued at \$72.2 million, was proposed in February 1970, but was not acted on by the 91st Congress. This bill will be resubmitted to the 92nd Congress.

Fluorspar, Acid

On July 10, 1970, Public Law 91-320 was enacted, authorizing the disposal of 212,637 short dry tons of excess acid grade fluorspar. Sales under this authorization totaled 100,159 short tons, valued at \$6.0 million. Approximately 112,500 short tons remained available for sale as of December 31, 1970.

Rubber

Sales of excess stockpile rubber totaled 14,000 tons, valued at \$6.1 million. These sales were made through a program announced May 19, 1970, under which GSA reentered the rubber market after an absence of 15 months. That program provided for regular monthly offerings of 7,000 tons of excess stockpile rubber. Because of the declining market situation for rubber, sales were temporarily suspended at the end of August. Efforts are underway to determine a program that will allow the Government to resume disposal of the 141,988 long tons remaining available for disposal.

Silver

Sales of Treasury silver (not included in stockpile inventories) totaled 32.5 million troy ounces, valued at \$56.2 million. The amount of revenue returned to the Treasury over and above the monetary value totaled approximately \$14.2 million. Sales of excess Treasury silver were completed on November 10, 1970.

In a related matter, Public Law 91-607, enacted December 31, 1970, authorized the U.S. Mint to produce commemorative Eisenhower silver dollar coins. These coins are to be made, in part, from 25.5 million ounces of excess stockpile silver which will be transferred back to the Mint.

Tin

There were no commercial sales of excess stockpile tin. However, sales through Agency for International Development foreign assistance programs totaled 1,784 long tons, valued at \$6.6 million. These sales reduced the amount of excess tin available for disposal to 20,627 long tons. As of the close of the period, efforts were underway to develop a successful means for reopening commercial sales of excess tin, which have now been suspended for more than 2 years.

Tungsten

Tungsten disposals for the reporting period totaled 10,826,354 pounds, valued at \$34.5 million. A portion of these sales was from the material made available for disposal under Public Law 91-325, enacted July 10, 1970. These disposals brought the balance of the tungsten available for disposal to 70,399,656 pounds of contained tungsten. Tungsten sales in calendar year 1970 comprised the largest

net commodity dollar sales. Total tungsten disposals for the year amounted to 15,156,287 pounds, valued at \$46.7 million.

Zinc

Zinc disposals totaled slightly more than 20,000 short tons, valued at \$6.4 million. Most of these sales were made to the U.S. Mint for use in production of coinage. These zinc sales lowered the amount of excess available for disposal to 44,784 short tons. Of the excess available for disposal, 22,597 short tons are restricted to Government use under the terms of the Congressional authorization which permitted disposal.

A disposal bill which would have permitted disposal of all remaining excess quantities of zinc was proposed to the Congress on February 2, 1970, along with a companion bill for the balance of the excess lead. These bills were not enacted, and will be resubmitted to the 92nd Congress.



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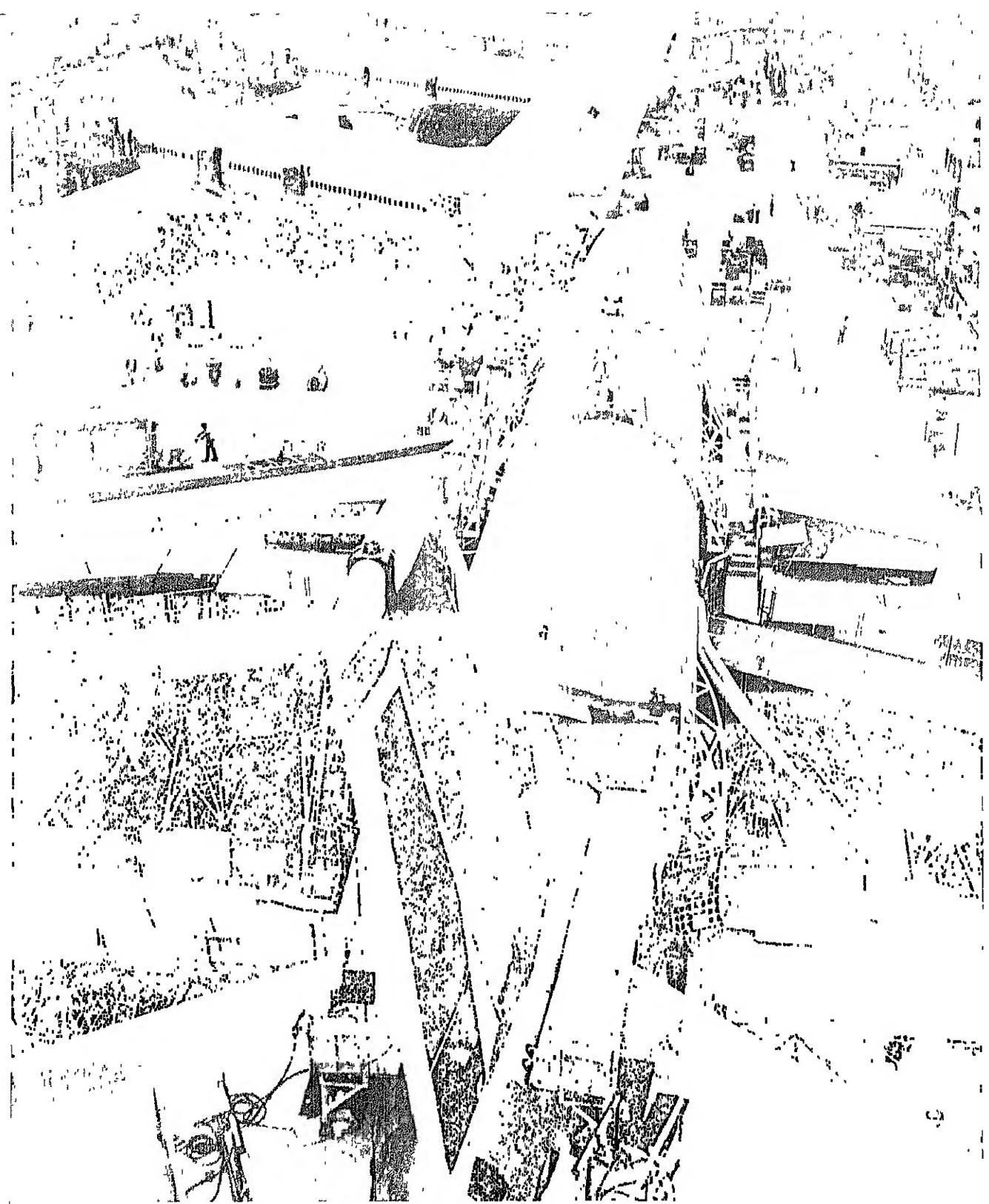
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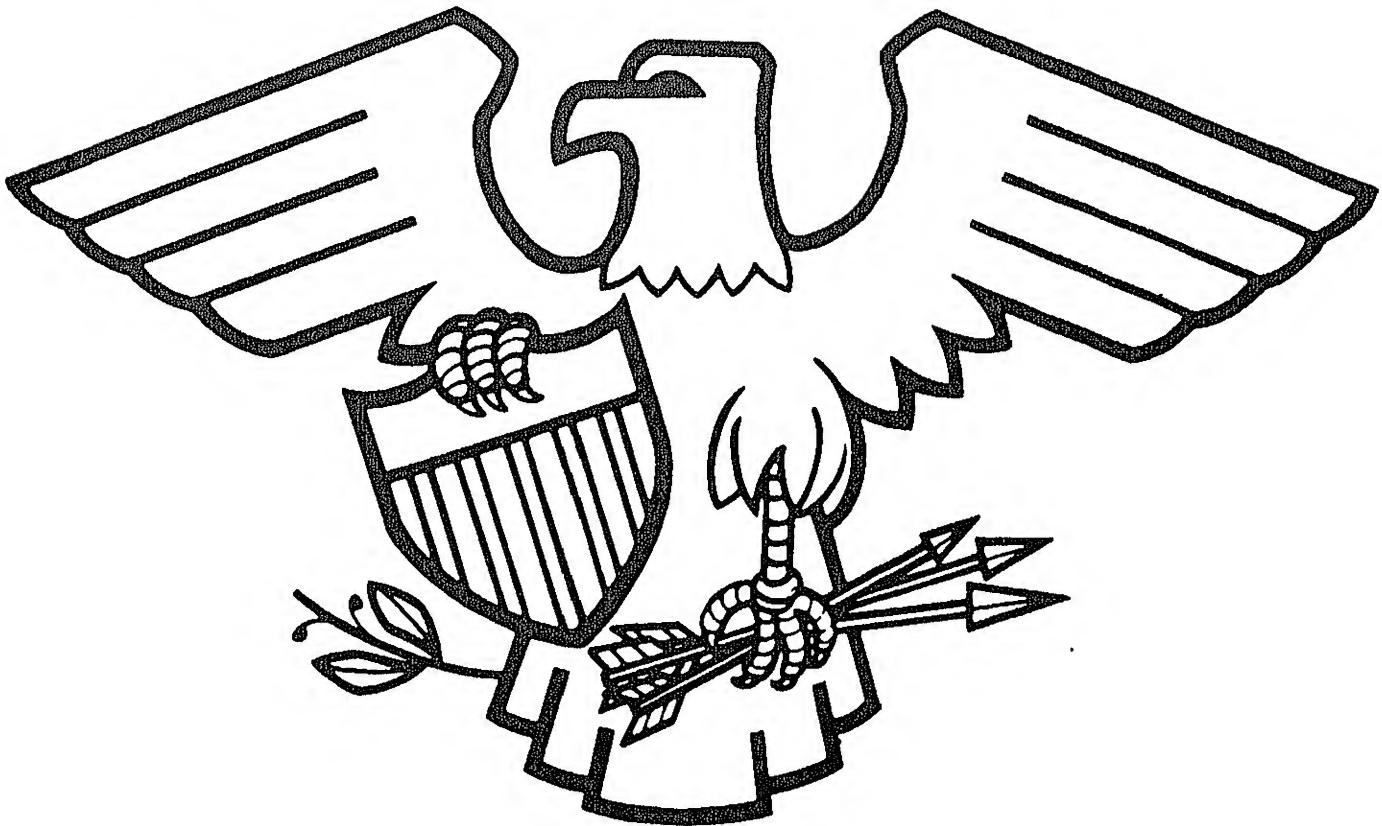
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The use of lightweight materials makes possible the volume building of giant airplanes

GOVERNMENT ACTIVITIES



General Services Administration
Department of Commerce
Department of State
Department of Agriculture
Department of Interior
Bureau of Mines
U. S. Geological Survey

ACTIVITIES OF THE GENERAL SERVICES ADMINISTRATION RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The General Services Administration is charged with the general operating responsibility, under policies set forth by the Office of Emergency Preparedness, for stockpile management, including (1) purchasing and making commitments to purchase, transferring, rotating, upgrading, and processing of metals, minerals, and other materials; (2) storage and maintenance of all strategic materials held in Government inventories; and (3) disposal of excess stockpile materials, including the development of disposal plans, selling the materials, and providing

for Government use of such materials.

The activities of the General Services Administration, particularly in connection with procurement, upgrading, and disposals, have been summarized in earlier sections of this report.

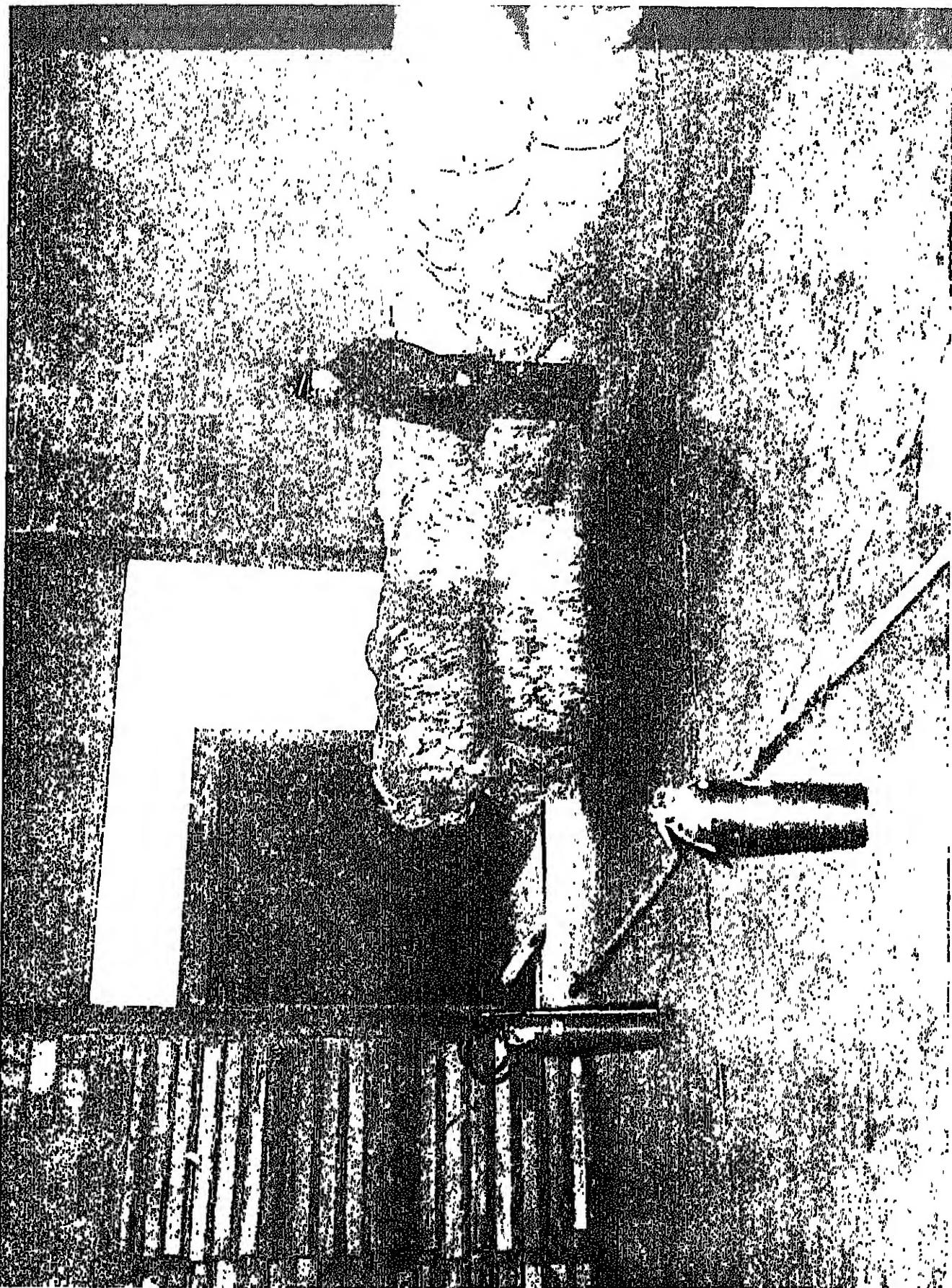
STORAGE AND MAINTENANCE

On December 31, 1970, there were 45.4 million tons of strategic materials stored at 135 locations as follows:

	As of December 31, 1970	Change in last 6 months
Military depots	35	
GSA depots	30	
Other Government-owned sites	18	
Leased commercial sites	12	
Industrial plantsites	38	-1
Commercial warehouses	2	
Total	135	-1

All stockpile material stored at an industrial plantsite location in Westfield,

Massachusetts, was sold and the lease canceled.



ACTIVITIES OF THE DEPARTMENT OF COMMERCE RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

RESPONSIBILITIES

The Department of Commerce has been delegated a number of responsibilities with regard to the National Stockpile, and these in turn have been assigned to the Bureau of Domestic Commerce within the Department. BDC prepares for the Office of Emergency Preparedness estimates of essential civilian and war-supporting requirements for strategic materials in a mobilization period, a basic element in determining stockpile objectives. In certain limited cases, it also prepares estimates of the mobilization supply of such materials. It reviews plans for disposal of surplus stockpile materials and provides OEP or GSA with its evaluation of the market impact of proposed schedules of sales. In addition, it develops recommendations in the matter of purchase specifications, special instructions, and storage procedures. BDC also prepares special studies for OEP regarding strategic material problems and in general, submits to OEP on behalf of the Department recommendations or advice on stockpile policies and programs.

ESSENTIAL CIVILIAN AND WAR-SUPPORTING REQUIREMENTS

During July-December 1970, BDC submitted to OEP consumption data for the years 1965-1969 for all 71 materials on the stockpile list. Supply data, including mobilization projections, were submitted to OEP for 17 of these materials. BDC also submitted a basic data study for beryl, which included a

requirements estimate for a 3-year conventional war.

DISPOSAL PROGRAMS

During this report period, BDC submitted to GSA disposal recommendations covering over 50 materials. Most of these recommendations were concerned with proposed disposal rates for fiscal year 1971 based on disposal experience in fiscal year 1970. In addition, several recommendations were submitted in connection with proposed legislation seeking Congressional approval for increased disposal authority.

PURCHASE SPECIFICATIONS AND SPECIAL INSTRUCTIONS

BDC submitted to OEP revised Purchase Specifications and corollary Special Instructions for beryl, beryllium-copper master alloy, and lead. The revised documents will help insure that the materials in inventory are of the proper form and quality to meet mobilization requirements. Any materials in inventory which are found to fall below current industrial standards may be subject to disposal.

STORAGE INSTRUCTIONS

BDC made recommendations to GSA regarding the storage of six stockpile materials. Improved storage methods were developed for beryl, beryllium-copper master alloy, pyrethrum, quinine, shellac, and tin.

SPECIAL STUDIES

A report entitled "Industrial Diamond and Small Diamond Dies, U. S. Consumption and Trade in 1969" was published by BDC in December 1970. The

data will be useful in disposal programming and in preparing requirements estimates. In addition, the report will have use in market and economic analyses, both by Government and private industry.

ACTIVITIES OF THE DEPARTMENT OF STATE RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The Department of State provides guidance regarding the effects of stockpiling program activities on United States foreign relations and deals with problems which may arise out of these activities.

The Department participates with other agencies in the periodic review of the supply and demand situation for each of the stockpiled materials and in the development of related stockpile objectives. It also provides estimates of political and economic reliability of foreign sources of supply in time of national emergency.

With regard to the disposal of surplus materials from the stockpile, the Department shares in the development of disposal programs and conducts appropriate consultations with interested foreign governments about each program. Based on these consultations, an evaluation is made of the political and economic effects of disposals on friendly foreign countries and on foreign relations of the United States. Recommendations

are made for the adoption or modification, as necessary, of the proposed disposal programs.

During July-December 1970, the Department conducted numerous consultations with foreign governments concerning new disposal programs and modifications of existing programs. In addition, it responded to representations made by foreign governments concerning the effects on their economy and trade of disposal programs and revisions of stockpile objectives.

The Department also responded to inquiries from international organizations concerning stockpile policies and programs. These organizations included the International Rubber Study Group, the International Lead and Zinc Study Group, the International Tin Council, the United Nations Conference on Trade and Development Committee on Commodities and Committee on Tungsten, the Ad Hoc Group on Trade of the Inter-American Economic and Social Commission, and the International Monetary Fund.

ACTIVITIES OF THE DEPARTMENT OF AGRICULTURE RELATING TO THE STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

BARTER ACTIVITIES

No barter contracts for strategic materials for subsequent transfer to the Supplemental Stockpile were signed during July-December 1970. The only strategic material remaining to be delivered to the Commodity Credit Corporation for transfer to the stockpile under existing contracts is diamond dies. During the report period, diamond dies valued at \$57,000 were delivered to CCC, bringing the cumulative total of strategic materials delivered to CCC since 1950 to approximately \$1.6 billion. Of this total, \$223.3 million in strategic materials had been transferred to the National Stockpile and about \$1.4 billion to the Supplemental Stockpile, through December 31, 1970.

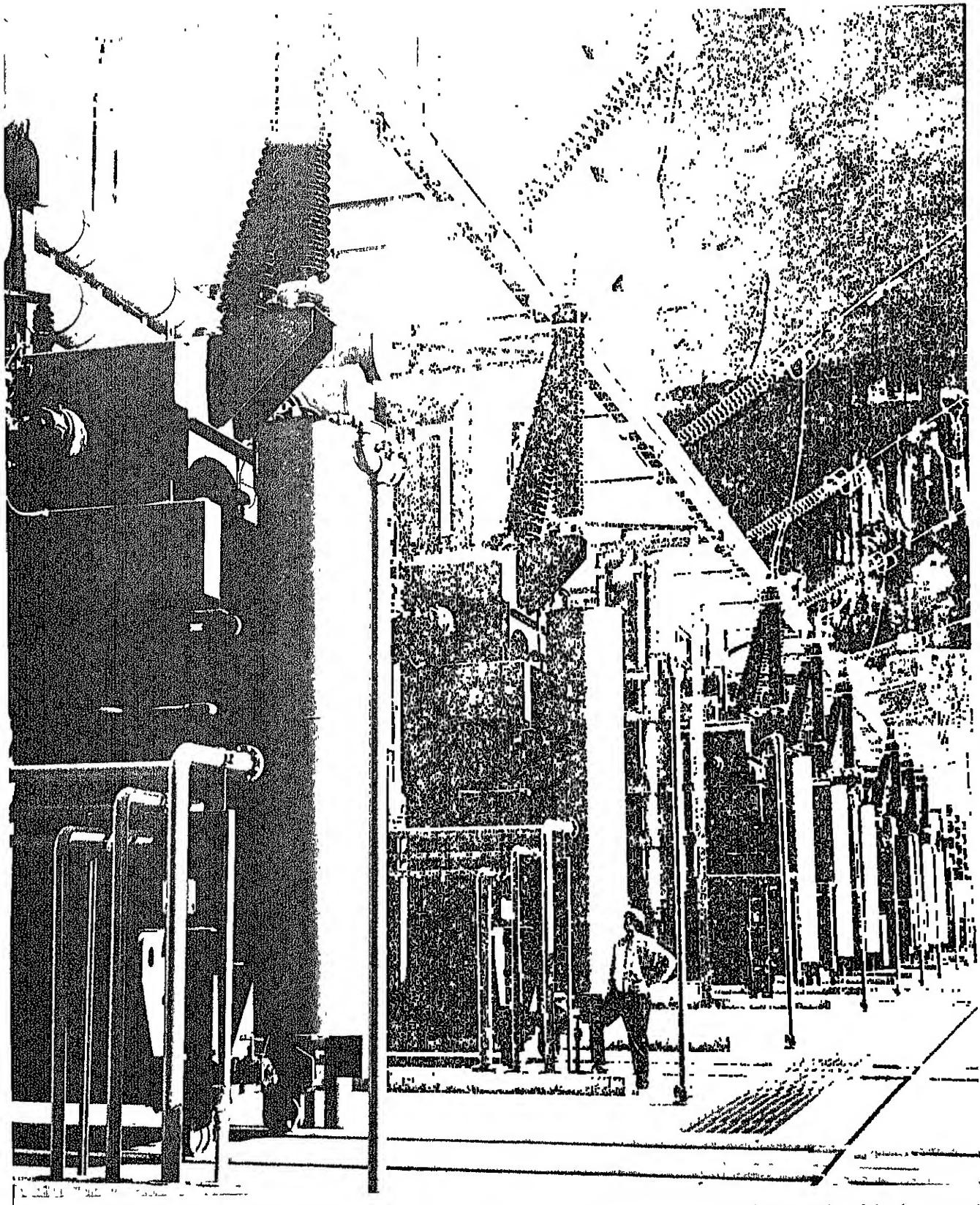
EXPANSION OF DOMESTIC SOURCES OF SUPPLY

The Department of Agriculture maintains a viable seed stock of strategic plant material (eight lots of *Atropa belladonna*, nine lots of *Digitalis lanata*, two lots of *Digitalis purpurea*, and eight elite lines of *Papaver somniferum*). The

stocks are considered sufficient to meet minimum national pharmaceutical production needs in event of an emergency. Stocks will be rejuvenated periodically when they reach a critical stage of low viability.

PACKAGING RESEARCH

The Forest Products Laboratory has obtained encouraging results in exploratory evaluations of laminated pallet deckboards and laminated pallet stringers produced by slicing, press-drying, and gluing. Standard pallet nails, plastic coated staples, and a resilient adhesive system all appeared to be suitable means of assembling the laminated pallet parts. If the proposed system proves feasible, it will provide means for using lower grade and underutilized species for pallet manufacture as well as a method of processing pallet parts with considerably less waste. These factors will tend to increase availability of lumber grades and species suitable for pallet manufacture and conserve better grades and more versatile species for more demanding uses.



Meeting the power needs of our Nation requires efficient combination of technology and critical materials.

ACTIVITIES OF THE DEPARTMENT OF THE INTERIOR RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The Department of the Interior is responsible for the management, conservation, and development of the Nation's natural resources to meet the requirements of national security and an expanding economy. The Department provides advice and assistance to the Office of Emergency Preparedness in formulating and carrying out programs for the stockpiling of strategic and critical materials. The Department of the Interior conducts research in exploration, mining, beneficiation, and metallurgy and compiles information on supply and demand for use in stockpile planning.

The Department conducts supply-requirements studies when market conditions or other circumstances indicate problem areas in which materials are likely to be in short supply and recommends appropriate action to overcome deficiencies. The Department also administers programs to encourage the exploration, development, and mining of minerals and metals for emergency purposes.

RUTILE EXPANSION PROGRAM

All of the programs initiated under the Defense Production Act prior to the end of 1970 have been completed. Under terms of the contract between the Office of Minerals and Solid Fuels and the Battelle Memorial Institute, the final report on commercial end use testing of rutile concentrate produced from material obtained from the deposit at Magnet Cove, Arkansas, has been received and approved by the Department of the

Interior. Plans are being made to release the published report to interested parties.

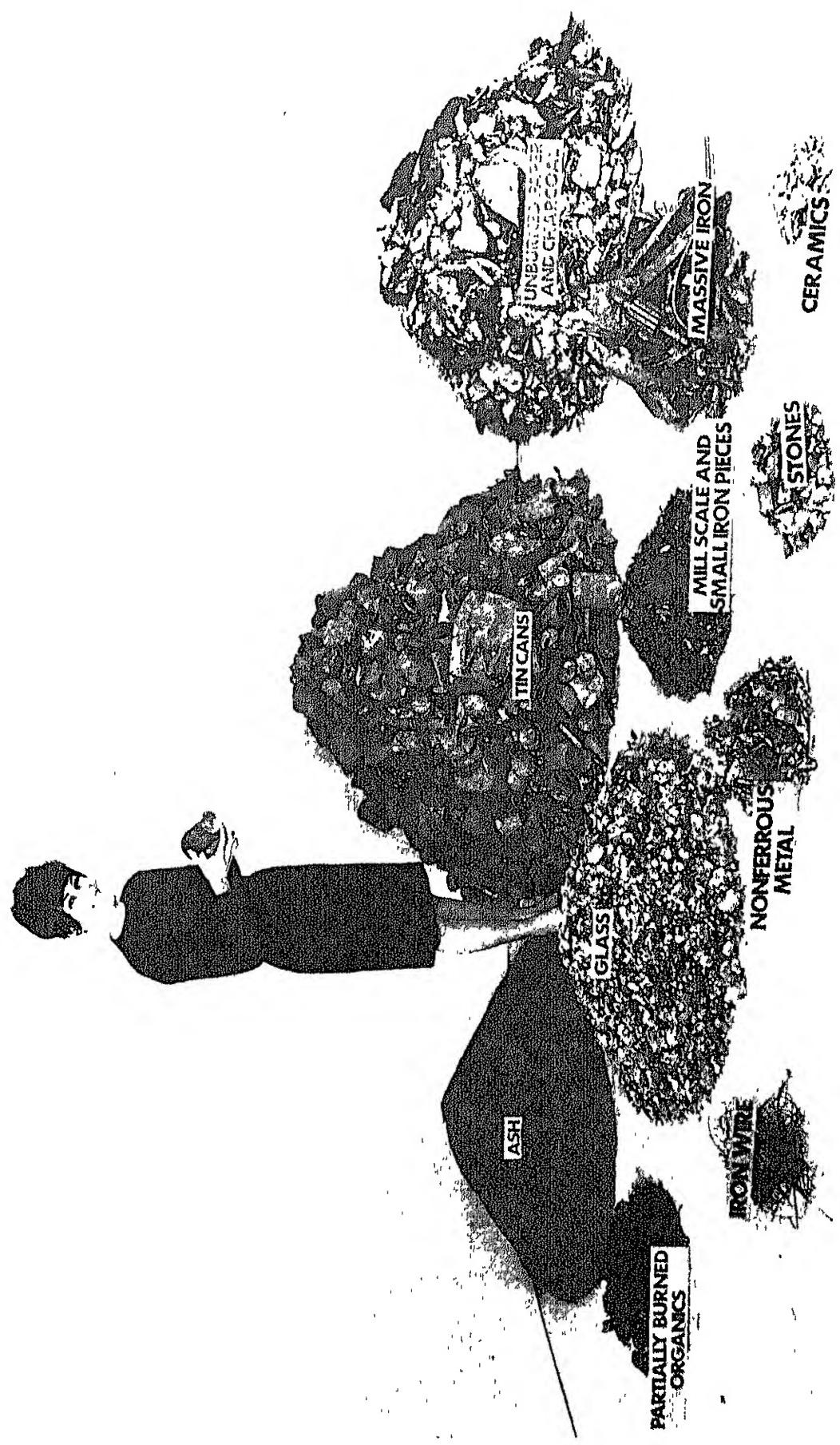
A final report is being prepared on the other Defense Production Act programs completed to date. These include rutile testing, development of substitutes for natural rutile, and potential rutile byproduct production from Florida phosphate mining operations.

Staff of the Office of Minerals and Solid Fuels met with representatives of the National Sand and Gravel Association and Bureau of Mines personnel from Knoxville, Tennessee, concerning possible production of byproduct rutile from sand and gravel operations in the Southeastern United States. Staff of the Office of Minerals and Solid Fuels and the Bureau of Mines also visited sand and gravel operations to obtain the support and cooperation of the operators in this project.

Laboratory investigations by the Bureau of Mines continued to develop methods to utilize abundant low grade domestic deposits of ilmenite in place of natural rutile.

RESEARCH AND RESOURCE DEVELOPMENT ACTIVITIES

The Bureau of Mines programs on mining and metallurgical research and mineral resource and environmental development range from evaluation of supply and demand for minerals to methodology for reutilization of waste materials. The programs contribute



Material separated from incinerator residue.

substantial and progressive technology that improves the domestic position on strategic and critical materials. Progress in conservation of critical materials as well as prevention of deleterious effects to the environment was demonstrated through the use of a Bureau method for treating a variety of electroplating wastes to recover nickel, copper, silver, and other metals.

COPPER POTENTIAL IN EASTERN ALASKA RANGE

Geologic and geochemical investigations by the Geological Survey have stimulated interest in disseminated copper deposits in Alaska. Private industry is exploring six deposits in the Eastern Alaska Range. The known deposits occur within a 1,000 square mile area between 141° and 143° west longitude. Surface sampling indicates mineral content as high as 0.4 percent copper, 0.015 percent molybdenum, and 0.25 ounce gold per ton. The mineralized areas range in size

from a few hundred square feet to a square mile. Further studies of the deposits are currently underway by Survey geologists.

EXTENSION OF UPPER MISSISSIPPI VALLEY ZINC-LEAD DISTRICT

The southern boundary of the upper Mississippi Valley zinc-lead district in Wisconsin and Illinois has been extended about 20 miles on the basis of field and laboratory investigations by the U.S. Geological Survey. Examinations of old lead mines and excavations near Mt. Carroll, Illinois, and lead isotope studies both indicate an extension of the district to the east, southeast, and south of the previous southern limits of the district.

Special and technical reports, issued during July-December 1970, having a relationship to strategic and critical materials are as follows:

BUREAU OF MINES

Reports of Investigations

- | | |
|------|---|
| 7422 | Production Potential of Copper Deposits Associated with Permian Red Bed Formations in Texas, Oklahoma, and Kansas. |
| 7426 | Kyanite Resources in the Northwestern United States (In two sections).
1. An Investigation of Selected Kyanite-Group Mineral Deposits. 2. A Market Study for Western Kyanite Ores. |
| 7432 | Rock Noise Source Location Techniques. |
| 7452 | Colorimetric Determination of Beryllium in Coal. |
| 7453 | Precipitation Strengthening of Pb-Cd-Sb Alloys. |
| 7454 | Utilization of Red Mud Residues from Alumina Production. |
| 7455 | Characteristics of Electrowon and of Hydrogen-Reduced Molybdenum Powder and Sheet. |
| 7458 | Yttria and Dysprosia as High-Temperature Thermistor Materials. |

- 7459 Chemical Reactions in the Roasting of Copper Sulfides.
 7462 Mine Roof Vibrations from Production Blasts, Shullsburg Mine,
 Shullsburg, Wis. (lead-zinc).
 7464 Malononitrile Extraction of Gold from Ores.
 7473 Processing Manganiferous Sea Nodules.
 7474 Recovering Elemental Sulfur from Nonferrous Minerals.
 7475 Extraction of Copper and Nickel from the Duluth Gabbro Complex by
 Selective High-Temperature Sulfalization.

Information Circulars

- 8469 Availability of U.S. Primary Nickel Resources.
 8494 Impact of Changing Technology on Refractories Consumption.
 8502 Metallurgical Application of Solvent Extraction.

GEOLOGICAL SURVEY

Professional Papers

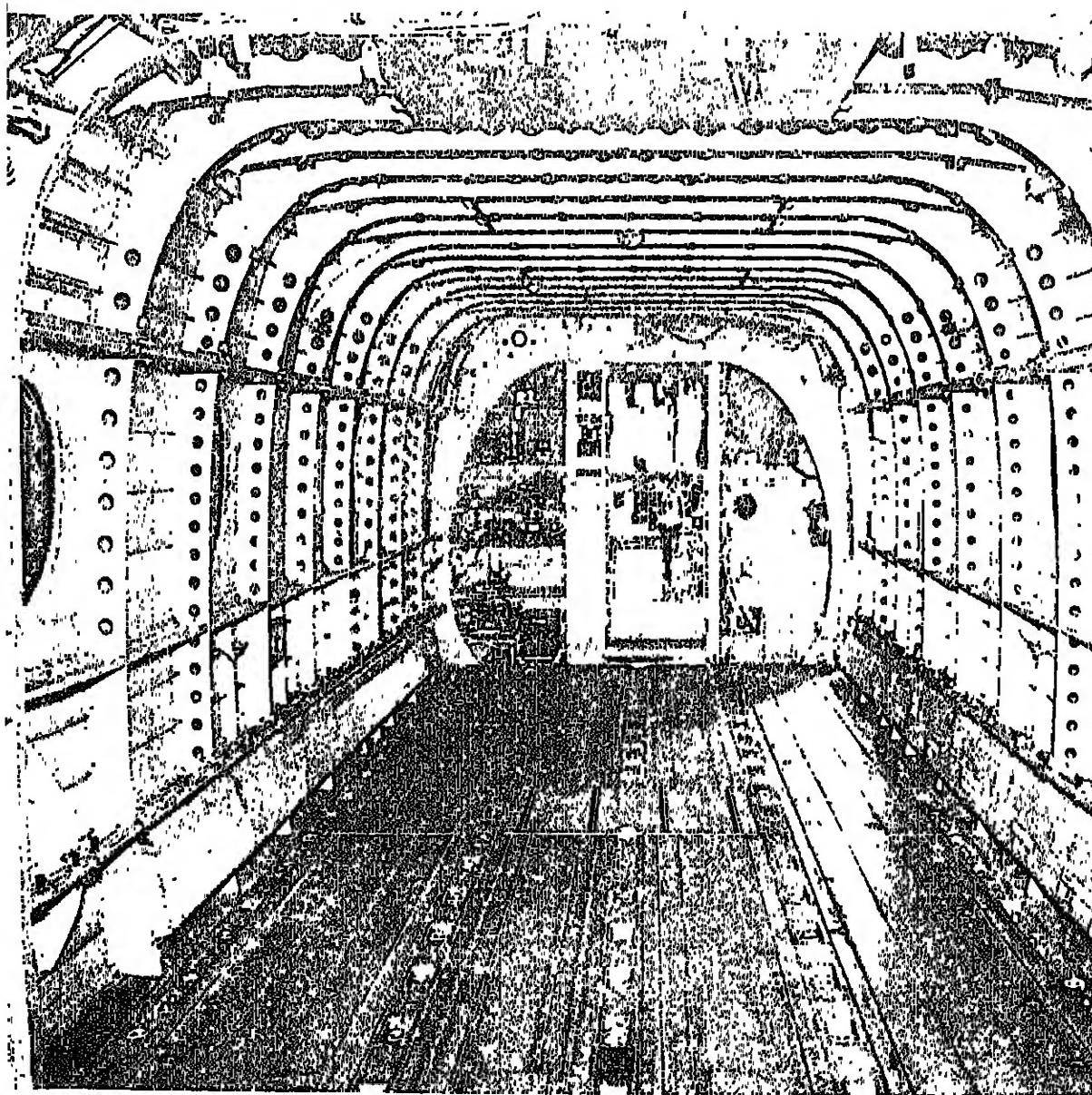
- 576-C Structure of the Slick Rock District and Vicinity, San Miguel and Dolores Counties, Colo., by D. R. Shawe (uranium, vanadium).
 649 Mafic-ultramafic Igneous Rocks and Associated Carbonatites of the Gem Park Complex, Custer and Fremont Counties, Colo., by R. L. Parker and W. N. Sharp (columbium, rare earths).
 700-C Geological Survey Research 1970. Short papers on analytical methods, economic geology, and related subjects.

Bulletins

- 1272-C Fluorite Deposits of the Quinn Canyon Range, Nev., by C. L. Sainsbury and F. J. Kleinhampl (fluorspar).
 1312-H Geology, Mineral Deposits, and Geochemical and Radiometric Anomalies, Serpentine Hot Springs area, Seward Peninsula, Alaska, by C. L. Sainsbury, Travis Hudson, Reuben Kachadoorian, and Thomas Richards (tin, gold).
 1312-L Geochemical and Geophysical Reconnaissance of Parts of the Yakutat and Mount Saint Elias Quadrangles, Alaska, by E. M. Mackevett, Jr., and George Plafker (copper, zinc, and others).
 1312-O Mineralogy and Geochemistry of Some Belt Rocks, Montana and Idaho, by J. E. Harrison and D. J. Grimes (copper).

Maps

- I-631 Lithologic, Geophysical, and Mineral Commodity Maps of Precambrian Rocks in Wisconsin, by Carl E. Dutton and Reta E. Bradley (copper).
- MR-52 Antimony Occurrences in Alaska, compiled by Edward H. Cobb.
- MR-53 Bismuth Occurrences in Alaska, compiled by Edward H. Cobb.
- MR-54 Mercury Occurrences in Alaska, compiled by Edward H. Cobb.
- MR-55 Molybdenum in the United States, Exclusive of Alaska, and Hawaii, by R. U. King.
- MR-56 Uranium, Thorium, and Rare-earth Elements in Alaska, compiled by Edward H. Cobb.



Interior of a modern military helicopter is designed for utility, not comfort.

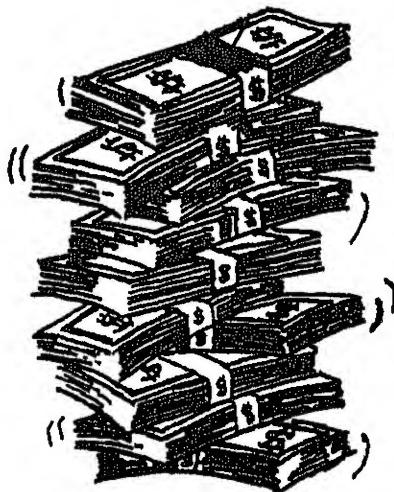
EXPENDITURES OF STOCKPILE FUNDS, BY TYPE
 (for the National Stockpile)

Cumulative and for First Half Fiscal Year 1971

Type of Expenditures	Cumulative Through June 30, 1970	Six Months Ended December 31, 1970	Cumulative Through December 31, 1970
Expenditures			
Gross Total	\$6,519,559,902	\$8,026,651	\$6,527,586,553
Less: Receipts from Rotation Sales and Reimbursements	545,877,587	206,340	546,083,927
Net Total	5,973,682,315	7,820,311	5,981,502,626
Materials Acquisition Costs, Total	5,439,206,617	65,915	5,439,272,532
Stockpile Maintenance Costs, Total	449,105,172	5,023,947	454,129,119
Facility Construction	43,772,457	-	43,772,457
Storage and Handling Costs	302,582,357	5,008,437	307,590,794
Net Rotation Costs	102,750,358	15,510	102,765,868
Administrative Costs	71,647,912	2,174,748	73,822,660
Operations, Machine Tool Program	13,722,614	555,701	14,278,315

Cumulative figures are the total of expenditures under PL 117, 76th Congress and PL 520, 79th Congress. Expenditures under PL 117 totaled \$70,000,000 of which \$55,625,237 was for materials acquisitions costs and \$14,374,763 was for other costs. Final expenditures under PL 117 were made in FY 1951.

Source: General Services Administration



TOTAL OBLIGATIONS AND EXPENDITURES OF STOCKPILING FUNDS

Under PL 117 and PL 520 for the National Stockpile
Cumulative and by Fiscal Period through December 31, 1970

Fiscal Period	OBLIGATIONS INCURRED ¹		EXPENDITURES ²	
	Net Change by Fiscal Period	Cumulative as of End of Period	By Fiscal Period	Cumulative as of End of Period
Prior to Fiscal Year 1948	\$ 123,871,685	\$ 123,871,685	\$ 66,330,731	\$ 66,330,731
Fiscal Year 1948	252,901,411	376,773,096	82,907,575	149,238,306
Fiscal Year 1949	459,766,881	836,539,977	304,486,177	453,724,483
Fiscal Year 1950	680,427,821	1,516,967,798	440,834,970	894,559,453
Fiscal Year 1951	2,075,317,099	3,592,284,897	655,537,199	1,550,096,652
Fiscal Year 1952	948,117,547	4,540,402,444	844,683,459	2,394,780,111
Fiscal Year 1953	252,375,163	4,792,777,607	906,158,850	3,300,938,961
Fiscal Year 1954	116,586,681	4,909,364,288	644,760,321	3,945,699,282
Fiscal Year 1955	321,799,833	5,231,164,121	801,310,094	4,747,009,376
Fiscal Year 1956 ³	251,692,667	5,482,856,788	382,011,786 ³	5,129,021,162 ³
Fiscal Year 1957	190,000,109	5,672,856,897	354,576,558	5,483,597,720
Fiscal Year 1958	54,473,250	5,727,330,147	173,753,997	5,657,351,717
Fiscal Year 1959	38,710,879	5,766,041,026	65,260,098	5,722,611,815
Fiscal Year 1960	19,859,290	5,785,900,316	49,227,142	5,771,838,957
Fiscal Year 1961	29,082,919	5,814,983,235	33,325,431	5,805,164,388
Fiscal Year 1962	31,179,407	5,846,162,642	33,695,431	5,838,859,819
Fiscal Year 1963	17,414,900	5,863,577,542	22,104,176	5,860,963,995
Fiscal Year 1964	15,489,597	5,879,067,139	16,091,067	5,877,055,062
Fiscal Year 1965	16,288,732	5,895,355,871	16,561,275	5,893,616,337
Fiscal Year 1966	16,296,070	5,911,651,941	16,468,100	5,910,084,437
Fiscal Year 1967	18,197,410	5,929,849,351	17,981,675	5,928,066,112
Fiscal Year 1968	16,008,237	5,945,857,588	15,902,213	5,943,968,325
Fiscal Year 1969	15,451,611	5,961,309,199	15,914,729	5,959,883,054
Fiscal Year 1970	14,795,005	5,976,104,204	13,799,261	5,973,682,315
Fiscal Year 1971 - First Half	8,024,773	5,984,128,977	7,820,311	5,981,502,626

¹Figures are the sum of obligations incurred under PL 520, 79th Congress and PL 117, 76th Congress. Final obligations under PL 117, 76th Congress were incurred in Fiscal Year 1949.

²Figures are the sum of expenditures under PL 520, 79th Congress and PL 117, 76th Congress. Final expenditures under PL 117, 76th Congress were made in Fiscal Year 1951.

³1956 and subsequent fiscal periods and cumulative expenditures are reported on an accrual basis.

Source: General Services Administration

